

CLAIMS

1. In a liquid crystal display (LCD) fabrication process, a method for cleaning a resin residue, the method comprising:
- forming an electrode layer;
- 5 forming a resin residue overlying a first area of the electrode layer;
- introducing a gas mixture including ozone into water to create a moist ozone gas; and,
- wet ashing the resin residue overlying the first area of the
- 10 electrode layer using the moist ozone gas.
2. The method of claim 1 further comprising:
- following the forming of an electrode layer, forming an interlayer film of resin overlying the electrode later;
- 15 patterning the resin interlayer;
- forming a via to access the first area of the electrode layer; and,
- wherein forming a resin residue overlying a first area of the electrode layer includes forming a resin residue in response to
- 20 forming the via.
3. The method of claim 1 wherein forming an interlayer film of resin overlying an electrode layer includes forming an interlayer film of resin having a thickness in the range of 100 to
- 25 1000 Angstroms (\AA).

4. The method of claim 1 wherein introducing a gas mixture including ozone into water to create a moist ozone gas includes introducing a gas mixture of approximately 10 % ozone by molecular weight (wt %).

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5. The method of claim 4 wherein introducing a gas mixture including ozone into water to create a moist ozone gas includes heating the water to a temperature of approximately 90 degrees C.

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6. The method of claim 1 further comprising:
following wet ashing the resin residue overlying the first area of the electrode layer using the ozonated water, depositing a metal layer overlying the first area of the electrode to form a pixel electrode.

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7. The method of claim 6 wherein depositing a metal layer overlying the first area of the electrode to form a pixel electrode includes depositing a metal layer material selected from the group including indium tin oxide (ITO) and aluminum overlying molybdenum.

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8. The method of claim 1 wherein wet ashing the resin residue overlying the first area of the electrode layer using the moist ozone gas includes etching the resin residue at a rate of 200 Å per minute.

2025 2020 2015 2010 2005 2000 1995 1990 1985 1980 1975 1970 1965 1960 1955 1950 1945 1940 1935 1930 1925 1920 1915 1910 1905 1900 1895 1890 1885 1880 1875 1870 1865 1860 1855 1850 1845 1840 1835 1830 1825 1820 1815 1810 1805 1800 1795 1790 1785 1780 1775 1770 1765 1760 1755 1750 1745 1740 1735 1730 1725 1720 1715 1710 1705 1700 1695 1690 1685 1680 1675 1670 1665 1660 1655 1650 1645 1640 1635 1630 1625 1620 1615 1610 1605 1600 1595 1590 1585 1580 1575 1570 1565 1560 1555 1550 1545 1540 1535 1530 1525 1520 1515 1510 1505 1500 1495 1490 1485 1480 1475 1470 1465 1460 1455 1450 1445 1440 1435 1430 1425 1420 1415 1410 1405 1400 1395 1390 1385 1380 1375 1370 1365 1360 1355 1350 1345 1340 1335 1330 1325 1320 1315 1310 1305 1300 1295 1290 1285 1280 1275 1270 1265 1260 1255 1250 1245 1240 1235 1230 1225 1220 1215 1210 1205 1200 1195 1190 1185 1180 1175 1170 1165 1160 1155 1150 1145 1140 1135 1130 1125 1120 1115 1110 1105 1100 1095 1090 1085 1080 1075 1070 1065 1060 1055 1050 1045 1040 1035 1030 1025 1020 1015 1010 1005 1000 995 990 985 980 975 970 965 960 955 950 945 940 935 930 925 920 915 910 905 900 895 890 885 880 875 870 865 860 855 850 845 840 835 830 825 820 815 810 805 800 795 790 785 780 775 770 765 760 755 750 745 740 735 730 725 720 715 710 705 700 695 690 685 680 675 670 665 660 655 650 645 640 635 630 625 620 615 610 605 600 595 590 585 580 575 570 565 560 555 550 545 540 535 530 525 520 515 510 505 500 495 490 485 480 475 470 465 460 455 450 445 440 435 430 425 420 415 410 405 400 395 390 385 380 375 370 365 360 355 350 345 340 335 330 325 320 315 310 305 300 295 290 285 280 275 270 265 260 255 250 245 240 235 230 225 220 215 210 205 200 195 190 185 180 175 170 165 160 155 150 145 140 135 130 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0

9. In a liquid crystal display (LCD) fabrication process, a method for repairing a resin interlayer surface, the method comprising:

- 5 forming an interlayer film of resin with a surface; dry etching the surface of the resin interlayer; in response to dry etching, damaging the resin interlayer surface;
- 10 introducing a gas mixture including ozone into water to create a moist ozone gas; wet ashing the resin interlayer surface using the moist ozone gas; and, in response to wet ashing the resin interlayer surface, repairing the damage caused by the dry etching.
- 15 10. The method of claim 9 further comprising: prior to forming an interlayer film of resin, forming an underlying electrode layer; following the forming of the interlayer film of resin,
- 20 patterning the resin interlayer; and, wherein dry etching the resin interlayer includes forming a via to access a first area of the electrode layer using a dry etching process.

11. The method of claim 9 wherein forming an interlayer film of resin includes forming an interlayer film of resin having a thickness in the range of 100 to 1000 Angstroms (\AA).

5 12. The method of claim 9 wherein introducing a gas mixture including ozone into water to create a moist ozone gas includes introducing a gas mixture of approximately 10 % ozone by molecular weight (wt %).

10 13. The method of claim 12 wherein introducing a gas mixture including ozone into water to create a moist ozone gas includes heating the water to a temperature of approximately 90 degrees C.

15 14. The method of claim 9 further comprising:
following wet ashing the resin interlayer surface using the moist ozone gas, depositing a metal layer overlying the resin interlayer surface and the first area of the electrode to form a pixel electrode.

20 15. The method of claim 14 wherein depositing a metal layer overlying the resin interlayer surface and the first area of the electrode to form a pixel electrode includes depositing a metal layer material selected from the group including indium tin oxide (ITO) and aluminum overlying molybdenum.

16. The method of claim 9 wherein wet ashing the resin interlayer surface using the moist ozone gas includes etching the resin interlayer surface at a rate of 200 Å per minute.

5 17. The method of claim 9 wherein wet ashing the resin interlayer surface using the moist ozone gas includes etching the resin interlayer surface a thickness in the range of 100 to 500 Å.

10 18. The method of claim 9 wherein dry etching the surface of the resin interlayer includes dry etching with a plasma including CF₄ and O₂.

15 19. In a liquid crystal display (LCD) fabrication process, a method for repairing a resin interlayer surface, the method comprising:

forming an electrode;
forming an interlayer film of resin with a surface, overlying an electrode later;
patterning the resin interlayer;
dry etching the surface of the resin interlayer to form a via to a first area of the electrode;
in response to dry etching, damaging the resin interlayer surface;
introducing a gas mixture including ozone into water to
25 create a moist ozone gas;

wet ashing the resin interlayer surface using the moist ozone gas;

in response to wet ashing the resin interlayer surface, repairing the damage caused by the dry etching; and,

5 forming a pixel electrode overlying the first area of the electrode and the surface of the resin interlayer.

~~26.~~ In a liquid crystal display (LCD) fabrication process, a method for cleaning a resin residue, the method comprising:

10 forming an electrode layer;

forming an interlayer film of resin overlying the electrode later;

patterning the resin interlayer;

15 forming a via to access the first area of the electrode layer;

in response to forming the via, forming a resin residue overlying the first area of the electrode;

introducing a gas mixture including ozone into water to create a moist ozone gas;

20 wet ashing the resin residue overlying the first area of the electrode layer using the moist ozone gas; and,

forming a pixel electrode overlying the first area of the electrode.